PROC. BIOL. SOC. WASH.
90(4), 1977, pp. 884–893

STILBOMASTAX, A NEW GENUS OF SPIDER CRAB (MAJIDAE: TYCHINAE) FROM THE WEST INDIES REGION, WITH NOTES ON AMERICAN RELATIVES[1]

Austin B. Williams, J. Kevin Shaw, and Thomas S. Hopkins

Abstract.—Williams, A. B., National Marine Fisheries Service Systematics Laboratory, National Museum of Natural History, Washington, D.C., 20560, J. K. Shaw, and T. S. Hopkins, Dauphin Island Sea Lab, P.O. Box 386, Dauphin Island, Ala. 36528.—A new genus, *Stilbomastax*, is recognized from the West Indies and Gulf of Mexico for reception of the spider crab *Tyche margaritifera* Monod, 1939 (= *Stilbognathus burryi* Garth 1952). The new genus in some respects lies between *Tyche* from the western hemisphere and *Stilbognathus* from the western Indian Ocean, and comparisons are made among species belonging to these genera.

Monod (1939) described a unique male spider crab from Guadeloupe as *Tyche margaritifera*. Garth (1952a), unaware of Monod's paper, described a similar "*Tyche*-like" female from southeast Florida as *Stilbognathus burryi*, believing this to be one of the interesting rare extensions of essentially Indo-Pacific genera into the Western Atlantic; but he also stated (p. 251) that "the erection of a new genus might be justified," basing his reasoning on Balss's (1929) distinction of *Tyche* from *Stilbognathus* on the basis of free vs. fused female abdominal segments. Guinot (1964), reviewing the related genera *Tyche* Bell 1835 (Western Atlantic–Eastern Pacific), *Stilbognathus* von Martens 1866 (Red Sea and east Africa), and *Ophthalmias* Rathbun 1897 (western Indian Ocean), left the generic placement of *T. margaritifera* and *S. burryi* uncertain, although she thought that they were possibly synonymous within the genus *Tyche*. She had only Monod's specimen and Garth's (1952a) figures for study. Mature male and female specimens recently collected in the eastern Gulf of Mexico provide ample evidence that Monod's and Garth's species are synonymous, as well as evidence to support Garth's idea of generic independence.

Stilbomastax, new genus

Postorbital lobe forming commencing orbit. Mouth frame (Fig. 1) divergent anteriorly, flared and thickened into strong rim at anterolateral corners; anterior margin thin and raised. External maxillipeds with merus deeply inserted into outer border of ischium, its central part porcellanous, hemispheric, but with thin alate mesial and anterolateral lobes; ischium deeply and broadly grooved longitudinally, its thin distal edge closely covering proximal part of meral swelling; a less prominent longitudinal groove between outer border of endognath and excavate inner border of

exognath; curved or straight prolongation at base of exognath overlapping ischium of endognath ventrally. Female abdomen (Fig. 8) almost circular in outline, segments 4–6 fused but evident. Male abdomen with 7 segments free, ribbed and uneven; first pleopods (Fig. 10a) of simple, somewhat flattened form distally, with short tip bent abruptly laterad and slightly reflexed to lateral opening.

Type-species.—*Tyche margaritifera* Monod 1939.

Etymology.—From the Greek "stilbo" glitter or gleam, and "mastax" jaws. The gender is feminine.

Remarks.—*Tyche* has an essentially rectangular mouth frame whose rim is variably raised at its anterolateral corner, depending on the species. Both *Ophthalmias* and *Stilbognathus* have a mouth frame with sides obviously diverging anteriorly; in *Ophthalmias* the ischium of the external maxillipeds is notched along its posteromesial margin, adjacent to the intervening triangular sternal plate, while the corresponding surface in *Stilbognathus* lacks this notch (Guinot 1964). In these characters *Stilbomastax* stands between *Tyche* and *Stilbognathus*, having a mouth frame less divergent anteriorly than the latter. Species of these genera may have one or all of the following features on the external maxillipeds: porcellanous surfaces on ischium or merus, swollen in some species; longitudinally grooved ischium; lamellar distal expansion on ischium covering merus proximally except along lateral side at articulation. Only *Tyche* and *Stilbomastax* have a basal prolongation on the exognath of the external maxillipeds (although there is a rudimentary projection in *Stilbognathus erythraeus* von Martens), hence in the last couplet of Garth's (1958a:162) Key to New World genera of the subfamily Ophthalmiinae *Stilbomastax* should be substituted for *Stilbognathus*.

Abdominal segments of female *Tyche* are free. Segments 4–6 are fused in *Stilbognathus* and *Stilbomastax* but in the former the segments are so united that they are nearly obliterated whereas in *Stilbomastax margaritifera* the segments are individually raised and easily recognizable. Male first pleopods of *Tyche* and *Stilbomastax* are similar (Fig. 10a, b; also Garth 1958b:pl. J, figs. 4–6), being least bent and reflexed distally in *T. emarginata* White. In *Stilbognathus* species the tip is flattened, differently bent and membranously ornamented (Fig. 10c).

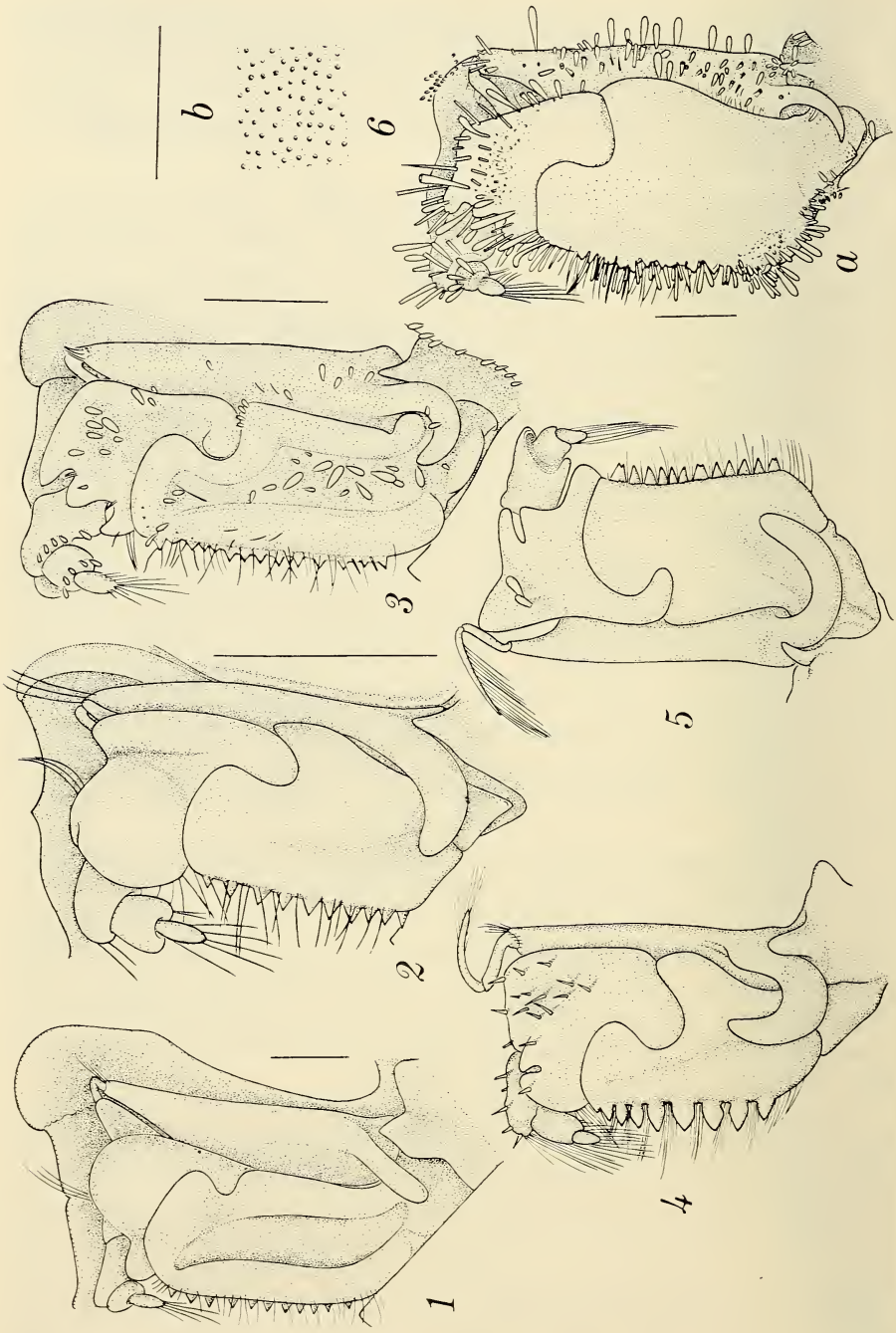
The characters found in *Stilbomastax margaritifera* that are shared with *Tyche* and *Stilbognathus* but differently combined, along with independent ones, are best accommodated by placing this species in a distinct genus.

Notes on Some American Representatives of the Subfamily Tychinae

Tychinae

Tychinae Dana 1851:43; (including *Tyche* Bell).

Stenocionopinae Miers 1879:652 (part: including *Stilbognathus* von Martens and *Tyche* Bell).


b
6
a
3
5
2
4
1

Stenociopoida Alcock 1895:161, 166 (part: including *Stilbognathus* von Martens and *Tyche* Bell).

Ophthalmiinae Balss 1931:6 (name substituted for Stenocionopinae Miers). —Sakai 1938:243.—1976:187.—Garth 1958a:161 (redefined).—Williams 1965:246.—Griffin 1966:262, 263, fig. 1 (sensu Garth 1958a).

Both Rathbun (1925) and Balss (1957) included genera discussed here in the subfamily Majinae Alcock 1895 (broad sense).

The following list contains citations of original descriptions, principal references, type-localties, distribution records, and emended descriptions of the mouthparts for all species of *Tyche* as well as *Stilbomastax margaritifera*, with selected measurements for the latter.

Stilbomastax margaritifera (Monod)
Figs. 1, 8, 10a

Tyche margaritifera Monod 1939:561, figs. 6, 7, 8, 9.—Guinot 1964:45, fig. 32; pl. 4, fig. 1.

Stilbognathus burryi Garth 1952a:252, pl. 1.—Guinot 1964:45, 51–53 (here and there).

Type-locality.—Basse-Terre, Guadeloupe, 15–20 m.

Known range.—SE of Cape San Blas to SE Florida; Guadeloupe.

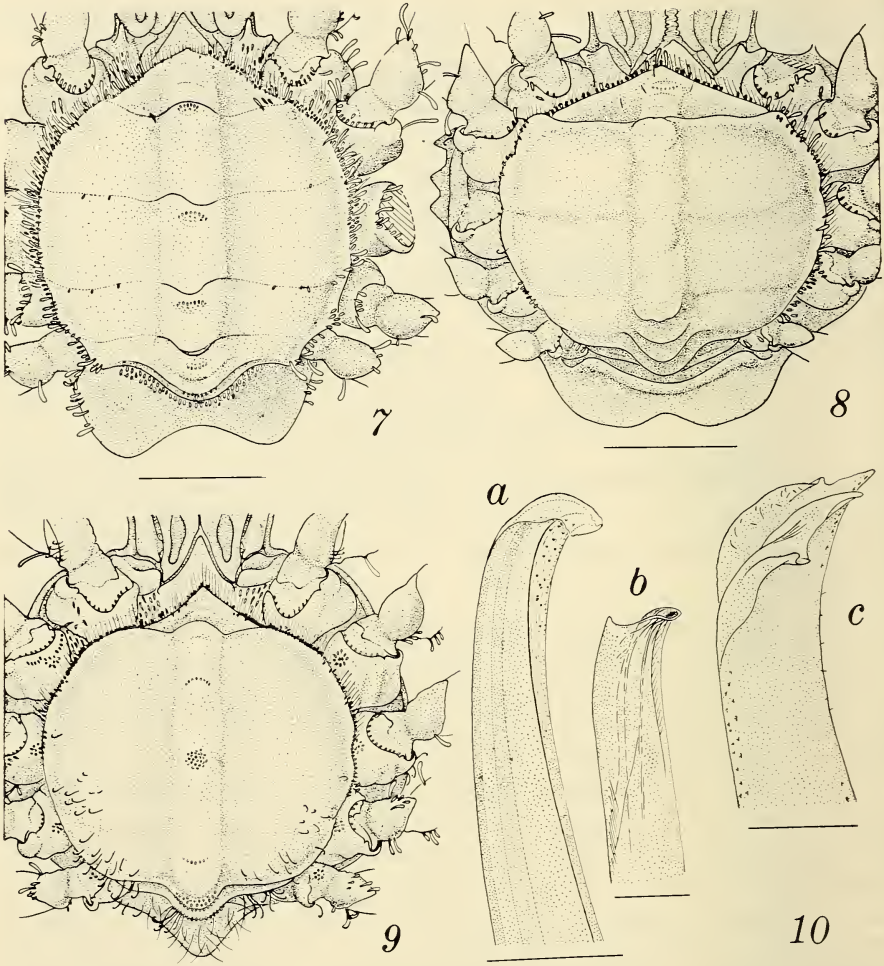
Habitat.—Garth (1952) noted the habitat as hard rock, broken shell, 38 m. Specimens from west Florida were found on hard rock and coral shell rubble among sponges, corals, and algae.

Mouthparts.—Mouth frame with thin anterior margin moderately raised, anterolateral margin thickened into strong rim. External maxillipeds with ischium broadly and longitudinally grooved centrally, tooth on mesial margin and with oblique, thin, flared anterior lobe covering edge of swollen merus; merus with deep proximal insertion along lateral margin of ischium, central part a glistening white hemisphere, anterolateral blade thin, triangular, projecting, and thin anteromesial margin trilobate; exognath with inner border excavate, basal prolongation variable, projecting either straight posteromesially or curving mesiad, sometimes laterad, spur on protopodite lateral to base of prolongation rather broad.

New material.—USNM 168479, 45 mi W Sanibel Island, Fla., 26°25′N, 82°57′32″W, 36.6 m, 28 June 1976; mature ♂, carapace length 27.8 mm,

←

Figs. 1–6. External maxilliped: 1. *Stilbomastax margaritifera* (USNM 168480); 2. *Tyche potiguara* (after Garth 1952b); 3. *T. lamellifrons* (USNM 72668); 4. *T. emarginata* (after Garth 1946); 5. *T. clarionensis* (after Garth 1958a); 6a. *T. galapagensis* (USNM 100917); b, punctate surface magnified. Scales: 1–6a = 1 mm, 6b = .5 mm.



Figs. 7–9. Mature female abdomen: 7. *Tyche emarginata* (USNM 46770); 8. *Stilbomastax margaritifera* (USNM 168480); 9. *Stilbognathus erythraeus* (USNM 169304). 10. Male first pleopod: a, *Stilbomastax margaritifera* (USNM 168479); b, *Tyche emarginata* (after Williams 1965); c, *Stilbognathus erythraeus* (after Guinot 1964, fig. 37b). Scales: 7–9 = 1 mm; 10a = .5 mm, b = 33 mm.

width 19.5; rostrum l 4.38, w 3.9, exorbital w 13.2, hepatic constriction w 12.5, posterior notch to gastric summit l 14.5, right cheliped palm height 4.0, l 9.5, dactyl l 4.6, ischio-merus l 9.38; R/V *Bellows*, trawl, T. S. Hopkins. USNM 168480, Florida Middle Ground, 80 mi W Tarpon Springs, Fla., 28°38′N, 84°19′W, 33 m, 11 June 1974; ♀ ov, carapace l 28.8, w 21.5; R/V *Bellows*, SCUBA, T. W. Hopkins.

Dauphin Island Sea Lab: MAFLA-II-N, Florida Middle Ground, 80 mi W Tarpon Springs, Fla., 28°24′N, 84°21′W, 36 m, 11 June 1974; ♂ carapace l 25.4, w 17.4; R/V *Bellows*, dredge, T. S. Hopkins. 33-194-IV-A-a, about 35 mi W Cape San Blas, Fla., 29°04′N, 85°14′W, 36.6 m, 26 February 1976; ♀ carapace l 25.2, w 18.3; R/V *Bellows*, dredge, T. S. Hopkins.

Florida Department of Natural Resources: 36 mi W Egmont Key, Fla., 27°37′N, 83°28′W, 37 m, R/V *H. Cortez*, B. Presley. FSBC I 1548, trawl, 3 January 1966; 2♂, carapace l 23.5–26.3, w 15.0–16.7. FSBC I 17511, dredge, 11 August 1967; ♂ carapace l 27.8, w 19.0. FBSC I 17512, dredge, 6 January 1967; ♂ carapace l 35.0, w 24.8. FSBC I 17513, dredge, 20 May, 1967; 2♂, carapace l of one 13.9, w 9.4.

Tyche potiguara Garth
Fig. 2

Tyche potiguara Garth 1952b:45, figs. 1–8.—Coelho and Ramos 1972:210.

Type-locality.—Off Cabo de São Roque, Brazil, 06°59′30″S, 34°47′W, 36.6 m, *Albatross* 2758.

Known range.—Paraiba to Alagoas, Brazil.

Mouthparts.—Mouth frame with anterior margin slightly raised, anterolateral margin slightly thickened. External maxillipeds with ischium shallowly grooved longitudinally, toothed on mesial margin and with anterior lobe covering merus proximally; merus with porcellanous, convexly meniscoid anteromesial lobe separated from narrow, elongate anterolateral lobe by longitudinal depression, body of merus inserted deeply into ischium laterally; exognath with strong somewhat flattened prolongation recurved to lie in proximal part of ischial groove, spur on protopodite lateral to base of prolongation.

Tyche lamellifrons Bell
Fig. 3

Tyche lamellifrons Bell 1835:173.—Garth 1958a:173.—1958b:pl. J, fig. 4; pl. 18, fig. 2 (*not* Garth 1946:406, the Galapagos specimens).

Type-locality.—Panama.

Known range.—Agua Verde Bay, Gulf of California, Mexico, to La Libertad, Ecuador (*not* Galapagos Islands, as reported by Garth (1946)).

Mouthparts.—Mouth frame with anterior margin moderately raised, anterolateral margin moderately raised and thickened. External maxillipeds with ischium broadly and longitudinally grooved, toothed on mesial margin, and with an anteromesial expansion covering merus proximally; merus with anteroexternal angle squared or rounded off, not extended as thin blade, mesial aspect trilobate; exognath with basal prolongation recurved

to lie in proximolateral entrance to central groove of ischium, spur on protopodite lateral to base of prolongation.

Tyche emarginata White
Figs. 4, 10b

Tyche emarginata White 1847:206.—Rathbun 1925:508, pl. 272; pl. 273, figs. 7–12.—Garth 1946:403–408 (here and there), text-fig. 1.—Williams 1965:247, figs. 225, 226, 233B.

Type-locality.—West Indies.

Known range.—Off Beaufort Inlet, N.C., through Bahamas to west coast of Florida.

Mouthparts.—Mouth frame with anterior margin slightly and anterolateral corner moderately raised and thickened. External maxillipeds smooth, shining and slightly inflated; ischium strongly toothed mesially, its broad laterally expanded anterior lobe overlying merus proximally; prominent merus deeply inserted into distolateral corner of ischium, with rounded thin lobe at anterolateral corner and internal corner divided into 3 narrowly separated lobes; exognath with large basal prolongation recurved to fit flush into shallow groove on base of ischium, spur on protopodite lateral to base of prolongation.

Tyche clarionensis Garth
Fig. 5

Tyche clarionensis Garth 1958a:176, fig. 5.—1958b:pl. J, fig. 5.

Type-locality.—Sulphur Bay, Clarion Island, Mexico, 55 m.

Known range.—Clarion Island.

Mouthparts.—Endognath of outer maxilliped smooth and inflated; ischium toothed along mesial margin, lateral expanded anterior lobe covering merus proximally; merus inserting deeply into ischium laterally, anterolateral angle produced into thin blade, anteromesial margin cut into 3 distinct lobes; hooked prolongation of exognath lodged in basal groove of ischium, completely filling it, spur on protopodite lateral to base of prolongation.

Tyche galapagensis Garth
Fig. 6

Tyche galapagensis Garth 1958a:178.—1958b:pl. J, fig. 6.

Type-locality.—Albemarle Point, Albemarle Island, Galapagos Islands, shore.

Known range.—Galapagos Islands: also Sullivan Bay, James Island;

Post Office Bay, Charles Island; Marchena Island; west of Gardner Island, Hood Island; Darwin Bay, Tower Island (see also Garth 1946:406).

Mouthparts.—Mouth frame with low anterior margin and slightly thickened anterolateral corner. External maxillipeds rather broad, margins hairy; endognath with ischium and merus inflated, smoothly convex but densely and finely punctate, superficially seeming almost coalesced; ischium with roughly rectangular anteromesial lobe overlapping part of merus, mesial margin with irregular teeth hidden in hairs; merus inserted deeply into outer margin of ischium, anteriorly narrowing thin and blade-like with distal margin serrate, mesial margin trilobate; exognath with basal prolongation curved but directed posteromesially rather than recurving onto ischium, spur on protopodite lateral to base of prolongation remote.

Key to Species Based on Endognath of External Maxillipeds

1. Ischium broadly and deeply grooved longitudinally 2
– Ischium not broadly and deeply grooved longitudinally 3
2. Merus swollen to glistening white hemisphere centrally *Stilbomastax margaritifera.*
– Merus not swollen centrally *Tyche lamellifrons.*
3. Ischium-merus smoothly convex, appearing fused 4
– Ischium-merus neither smoothly convex nor appearing fused 5
4. Ischium-merus smooth and shining; mesial teeth easily visible *T. emarginata.*
– Ischium-merus not shiny but uniformly punctate; mesial teeth hidden in hairs *T. galapagensis.*
5. Unswollen merus with margin trilobate near palp *T. clarionensis.*
– Somewhat swollen ⅔ of merus with margin entire near palp *T. potiguara.*

Acknowledgments

We thank John S. Garth for generously discussing and critically reading the manuscript. We also thank J. Forest, Muséum National d'Histoire Naturelle Paris, L. B. Holthuis, Rijksmuseum van Natuurlijke Historie, Leiden, and David K. Camp, Florida Department of Natural Resources, St. Petersburg, for loan of study material. Initial field work was supported by a subcontract of the Bureau of Land Management Contract No. 8550-CTS-30 to T. S. Hopkins. The illustrations were prepared by Maria M. Diéguez.

Literature Cited

Alcock, A. W. 1895. Materials for a carcinological fauna of India. No. 1. The Brachyura Oxyrhyncha. Journal of the Asiatic Society of Bengal 64:157–291, pls. 3–5.

Balss, H. 1929. Decapoden des Roten Meeres. IV. Oxyrhyncha und Schlussbetrachtungen. Denkschriften Akademie der Wissenschaften, Wien, Mathematisch-Naturwissenschaftliche Klasse 102:1–30.

———. 1957. Decapoda. VIII. Systematik. Bronns Klassen und Ordnungen des Tierreichs. Bd. 5, Abt. I, Buch 7. Lf. 12:1050–1672.

Bell, T. 1835. Some account of the Crustacea of the coasts of South America, with descriptions of new genera and species; founded principally on the collections obtained by Mr. Cuming and Mr. Miller. (Tribus 1, Oxyrhynchi). Proceedings of the Zoological Society of London 3:169–173.

———. 1836. Some account of the Crustacea of the coasts of South America, with descriptions of new genera and species; founded principally on the collections obtained by Mr. Cuming and M. Miller. Transactions of the Zoological Society of London 2:39–66, pls. 8–13.

Coelho, P. A., and M. de A. Ramos. 1972. A constituição e a distribuição da fauna de decapodos do littoral leste de America do Sul entre as latitudes de 5°N e 39°S. Trabalhos do Instituto Oceanográfia Universidade Federal Recife 13:133–236.

Dana, J. D. 1851. On the classification of the maioid Crustacea or Oxyrhyncha. American Journal of Science and Arts, Ser. 2, 11:425–434.

Desbonne, I. 1867. *In* I. Desbonne and A. Schramm, Crustacés de la Guadeloupe d'après un manuscrit du . . . I. Desbonne comparé avec les échantillons de crustacés de sa collection et les dernières publications de MM. H. de Saussure et W. Stimpson. I. Partie. Brachyures. [Edited, with a preface, by A. Schramm] 60 pp., pls. 1–8.

Garth, J. S. 1946. Littoral brachyuran fauna of the Galapagos Archipelago. Allan Hancock Pacific Expeditions 5(10):i–iv, 341–601, pls. 49–87.

———. 1952a. A review of the crustacean genus *Stilbognathus* von Martens (Decapoda, Maiidae) with description of a new species from the east coast of Florida. Bulletin of Marine Science of the Gulf and Caribbean 1(4):249–256, 1 pl.

———. 1952b. "Tyche potiguara," a new species of decapod crustacean from Brazil (Maiidae, Ophthalmiinae). Revista Brasiliera de Biologia 12(1):45–48.

———. 1958a. Brachyura of the Pacific coast of America, Oxyrhyncha. Allan Hancock Pacific Expeditions 21(1):xii + 499 pp.

———. 1958b. Brachyura of the Pacific coast of America, Oxyrhyncha. Tables and plates. Ibid. 21(2):501–854, pls. A–Z, 1–55.

Griffin, D. J. G. 1966. A review of the Australian majid spider crabs (Crustacea, Brachyura). Australian Zoologist 13(3):259–298, pls. 15–17.

Guinot, D. 1964. Sur une collection de crustacés décapodes brachyoures de Mer Rouge et de Somalie. Remarques sur les genres *Calappa* Weber, *Menaethiops* Alcock, *Tyche* Bell, *Ophthalmais* Rathbun et *Stilbognathus* von Martens. Bollettino del Museo Civico di Storia Naturale di Venezia 15 (for 1962):7–63, pls. 1–4.

Martens, E. von. 1866. Verzeichniss der von Dr. E. Schweinfurth im Sommer 1864 auf seiner Reise am Rothen Meere Gesammelten und nach Berlin eingesendeten zoologischen Gegenstände. II. Crustaceen. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien 16:377–382.

Miers, E. J. 1879. On the classification of the maioid Crustacea or Oxyrhyncha, with a synopsis of the families, subfamilies, and genera. Journal of the Linnean Society, London, Zoology 14:634–673, pls. 12–13.

Monod, T. 1939. Sur quelques crustacés de la Guadeloupe (Mission P. Allorge, 1936). Bulletin du Museum National d'Histoire Naturelle, Paris. Ser. 2, 11(6): 557–568.

Rathbun, M. J. 1925. The spider crabs of America. United States National Museum Bulletin 129:xx + 613 pp., 283 pls.

Sakai, T. 1938. Studies on the crabs of Japan. III. Brachygnatha, Oxyrhyncha. Yokendo, Tokyo, pp. 193–364, pls. 20–41.

———. 1976. Crabs of Japan and the adjacent seas. Kodansha Ltd., Tokyo, 773 pp. [English text].

White, A. 1847. Short descriptions of some new species of Crustacea in the collection of the British Museum. Annals and Magazine of Natural History 20(132): 205–207.

Williams, A. B. 1965. Marine decapod crustaceans of the Carolinas. United States Fish and Wildlife Service Fishery Bulletin 65(1):xi + 298 pp.

Footnote

[1] Contribution from National Marine Fisheries Service Systematics Laboratory, and No. 011 from Marine Environmental Sciences Consortium, Dauphin Island, Ala.